PATENT
Docket No. 0023-0118

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Patent Application of	)	**Mail Stop: Appeal Brief - Patents**
	)	
Der-Hwa GAN et al.	)	Group Art Unit: 2616
	)	
Application No.: 09/354,640	)	Examiner: C. Ho
	)	
Filed: July 15, 1999	)	
	)	
For: METHOD AND APPARATUS FOR FAST REROUTE IN A CONNECTION-ORIENTED NETWORK	)	

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APPEAL BRIEF

This Appeal Brief is submitted in response to the Office Action, dated July 13, 2006, which re-opened prosecution of the present application, and in support of the Notice of Appeal, filed October 12, 2006.

I. REAL PARTY IN INTEREST

The real party in interest in this appeal is Juniper Networks, Inc.

II. RELATED APPEALS, INTERFERENCES, AND JUDICIAL PROCEEDINGS

Appellants are unaware of any related appeals, interferences or judicial proceedings.

III. STATUS OF CLAIMS

Claims 1-4, 6, 8-21, and 24 are pending in this application. Claims 5, 7, 22, and 23 have been canceled without prejudice or disclaimer.

Claims 1-4, 6, 8-21, and 24 were rejected in the Office Action, dated July 13, 2006, and are the subject of the present appeal. These claims are reproduced in the Claim Appendix of this Appeal Brief.

IV. STATUS OF AMENDMENTS

No amendment was filed subsequent to the Office Action, dated July 13, 2006.

V. SUMMARY OF CLAIMED SUBJECT MATTER

In the paragraphs that follow, each of the independent claims and the claims reciting means-plus-function or step-plus-function language that is involved in this appeal will be recited followed in parenthesis by examples of where support can be found in the specification and drawings.

Claim 1 recites a network (140, Fig. 1a) for forwarding packets from a source device (100, Fig. 1a) to a destination device (110, Fig. 1a), said network including a plurality of network elements including a plurality of nodes (130, Fig. 1a) and connecting links (150, Fig. 1a), the plurality of nodes including at least one alternative-route-enabled node (201, Fig. 2a) and at least

one non-alternative-route-enabled node (203, Fig. 2a), wherein the at least one non-alternative-route-enabled node comprises a storage space to store an initial route from the source device to the destination device (Fig. 6b; pg. 11, lines 16-20; pg. 8, lines 11-12); a mechanism to detect failure in a downstream network element in the initial route (315, Fig. 3a; pg. 8, line 27, to pg. 9, line 2); and a forwarder to automatically forward a failure message upstream along the initial route to an alternative-route-enabled node, the failure message causing the alternative-route-enabled node to begin forwarding packets on an alternative route (322, 324, Fig. 3a; pg. 9, lines 2-9).

Claim 8 recites a method for forwarding packets from a source device (100, Fig. 1a) to a destination device (110, Fig. 1a) in a network of interconnected elements including nodes (130, Fig. 1a) and links (150, Fig. 1a), comprising determining an initial route, the initial route including at least one alternative-route enabled node and at least one non-alternative-route-enabled node, the at least one alternative-route-enabled node and the at least one non-alternative-route-enabled node storing an initial route from the source device to the destination device (330, Fig. 3b; pg. 8, lines 4-12); determining an alternative route by identifying the at least one alternative-route-enabled node in the initial route, identifying downstream interconnected elements, and generating the alternative route based on the identified at least one alternative-route-enabled node and the identified downstream interconnected elements (308, Fig. 3a; 505-525, Fig. 5a; pg. 8, lines 19-24, pg. 10, lines 7-15); forwarding packets on the initial route (310, Fig. 3a; pg. 8, lines 24-25); detecting a failed element (315, Fig. 3a; pg. 8, lines 27-30); and automatically forwarding packets on the alternative route without communicating with either the source or the destination (322, 320, 324, Fig. 3a; pg. 8, line 30, to pg. 9, line 9).

Claim 14 recites a method for forwarding packets from a source device (100, Fig. 1a) to a destination device (110, Fig. 1a) in a network of interconnected elements including nodes (130, Fig. 1a) and links (150, Fig. 1a), comprising determining an initial route by determining a short path from the destination device to the source device within the network (305, Fig. 3b; 410, Fig. 4; pg. 9, lines 15-17), refining the path according to administrative constraints (415, 420, Fig. 4; pg. 9, lines 19-29), and establishing the path as the initial route (425, Fig. 4; pg. 9, lines 29-30), the initial route being prioritized to establish a hierarchy for preemption in routing network traffic (pg. 10, lines 1-6); determining an alternative route (308, Fig. 3a; pg. 8, lines 19-21); forwarding packets on the initial route (310, Fig. 3a; pg. 8, lines 24-25); detecting a failed element (315, Fig. 3a; pg. 8, lines 27-29); and automatically forwarding packets on the alternative route without communicating with either the source or the destination (322, 320, 324, Fig. 3a; pg. 8, line 30, to pg, 9, line 9).

Claim 18 recites a method for locally rerouting packets traveling on an established route when a node in a network of interconnected nodes fails, the method comprising computing, at select intermediary nodes along the established route, an alternative route leading from the select intermediary node to the destination device of the established route (308, Fig. 3a; pg. 8, lines 19-21); storing, at each of the select intermediary nodes, the alternative route (pg. 8, lines 22-24); determining locally that the established route has failed (315, Fig. 3a; pg. 8, lines 27-29); and automatically forwarding packets on the alternative route (322, 320, Fig. 3a; pg. 8, line 30, to pg. 9, line 9).

Claim 24 recites a network for forwarding packets from a source device (100, Fig. 1a) to a destination device (110, Fig. 1a) and including a plurality of intermediate network nodes (130,

Fig. 1a), the plurality of intermediate network nodes comprising at least one first node (201, Fig. 2a) configured to store an initial route from the source device to the destination device and at least one alternative route from the source device to the destination device (pg. 8, lines 11-12 and 19-24), detect a failure in a downstream network node in the initial route (315, Fig. 3a; pg. 8, lines 27-29), and automatically forward a packet to a node on one of the at least one alternative route in response to detecting the failure (322, 320, Fig. 3a; pg. 8, line 30, to pg. 9, line 9); and at least one second node (203, Fig. 2a) configured to store the initial route (pg. 8, lines 11-12), detect a failure in a downstream network node in the initial route (315, Fig. 3a; pg. 8, lines 27-29, and forward a failure message to an upstream first node in response to detecting the failure, the failure message causing the upstream first node to automatically forward a packet to a node on one of the at least one alternative route (322, 324, Fig. 3a; pg. 8, line 30, to pg. 9, line 9).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Claims 1, 8, 18, and 24 stand rejected under 35 U.S.C. § 102(e) as anticipated by McAllister et al. (U.S. Patent No. 6,560,218; referred to hereinafter as "McAllister '218").

B. Claims 2, 3, 15, and 16 stand rejected under 35 U.S.C. § 103(a) as unpatentable over McAllister '218 in view of Rexford et al. (U.S. Patent No. 6,633,544).

C. Claims 4, 6, 11-13, 17, 19, and 21 stand rejected under 35 U.S.C. § 103(a) as unpatentable over McAllister '218 in view of Masuro et al. (U.S. Patent No. 6,122,753).

D. Claims 9, 14, and 20 stand rejected under 35 U.S.C. § 103(a) as unpatentable over McAllister '218 in view of Cheng (U.S. Patent No. 6,600,724).

E. Claim 10 stands rejected under 35 U.S.C. § 103(a) as unpatentable over

McAllister '218 in view of Cheng, and further in view of Cosares et al. (U.S. Patent No. 5,546,542).

F. Claims 1, 8, 18, and 24 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Haskin et al. (U.S. Patent No. 6,813,242) in view of McAllister et al. (U.S. Patent No. 6,697,329; referred to hereinafter as "McAllister '329").

G. Claim 14 stands rejected under 35 U.S.C. § 103(a) as unpatentable over McAllister '329 in view of Cheng.

VII. ARGUMENTS

A. The rejection of claims 1, 8, 18 and 24 under 35 U.S.C. § 102(e) based on McAllister '218 should be reversed.

The initial burden of establishing a *prima facie* basis to deny patentability to a claimed invention always rests upon the Examiner. In re Oetiker, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). A proper rejection under 35 U.S.C. § 102 requires that a single reference teach every aspect of the claimed invention either explicitly or impliedly. Any feature not directly taught must be inherently present. Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 2 USPQ2d 1051 (Fed. Cir. 1987).

1. Claim 1.

Independent claim 1 is directed to a network for forwarding packets from a source device to a destination device, where the network includes a plurality of network elements including a plurality of nodes and connecting links. The plurality of nodes includes at least one alternative-route-enabled node and at least one non-alternative-route-enabled node. The at least one non-alternative-route-enabled node includes a storage space to store an initial route from the source

device to the destination device; a mechanism to detect failure in a downstream network element in the initial route; and a forwarder to automatically forward a failure message upstream along the initial route to an alternative-route-enabled node, where the failure message causes the alternative-route-enabled node to begin forwarding packets on an alternative route. McAllister '218 does not disclose or suggest this combination of features.

For example, McAllister '218 does not disclose or suggest a plurality of nodes including at least one alternative-route-enabled node and at least one non-alternative-route-enabled node. The Examiner relies on node A in Fig. 2 of McAllister '218 as allegedly corresponding to at least one alternative-route-enabled node and on nodes B and C in Fig. 2 of McAllister '218 as allegedly corresponding to at least one non-alternative-route-enabled node (Office Action, pg. 3). Appellants respectfully disagree with the Examiner's interpretation of McAllister '218.

As illustrated in Fig. 2 of McAllister '218, Node A connects to Node C via a primary route and connects to Node B via an alternate route. Thus, McAllister '218's Node A is an alternative-route-enabled node. Moreover, as clearly illustrated in Fig. 2, Node B connects to Node A via a primary route and connects to Node D via an alternate route. Thus, McAllister '218's Node B would be construed as an alternative-route-enabled node (since Node B has the capability of transmitting data via a primary route and an alternate path) and not, as alleged by the Examiner, a non-alternative-route-enabled node. As further illustrated in Fig. 2, Node C connects to Node D via a primary route and connects to Node B via an alternate route. Thus, McAllister '218's Node C would be construed as an alternative-route-enabled node (since Node C has the capability of transmitting data via a primary route and an alternate path) and not, as alleged by the Examiner, a non-alternative-route-enabled node. Moreover, McAllister '218

specifically discloses that each node contains a local routing table 11 that contains information pertaining to a primary route and an alternate route (see, for example, col. 2, line 63, to col. 3, line 2). Clearly, McAllister '218's nodes are alternative-route-enabled nodes. The fact that instances may arise when Node B or Node C may temporarily need to use the alternate route (e.g., when a fault occurs on the primary route) does not render Node B and Node C as non-alternative-route-enabled nodes.

Since McAllister '218 does not disclose or suggest a non-alternative-route-enabled node, McAllister '218 cannot disclose or suggest at least one non-alternative-route-enabled node that comprises a storage space to store an initial route from the source device to the destination device; a mechanism to detect failure in a downstream network element in the initial route; and a forwarder to automatically forward a failure message upstream along the initial route to an alternative-route-enabled node, the failure message causing the alternative-route-enabled node to begin forwarding packets on an alternative route, as also recited in claim 1.

Even assuming, for the sake of argument, that McAllister '218's Nodes B and C could reasonably be construed as non-alternative-route-enabled nodes (a point that Appellants in no way concede), McAllister '218 does not disclose or suggest that Nodes B and C include a storage space to store an initial route from the source device to the destination device, as recited in claim 1. The Examiner relies on col. 2, lines 30-45, of McAllister '218 for allegedly disclosing this feature (Office Action, pg. 3). Appellants respectfully disagree with the Examiner's interpretation of McAllister '218.

At col. 2, lines 30-45, McAllister '218 discloses:

> network nodes, each network node having a local static routing tables providing next hop routing information to adjacent nodes, characterized in that said routing

> tables define a primary route and an alternate route to adjacent nodes; a network node receives a setup message for the call and searches its routing table for corresponding routing information; the node, based on the corresponding routing information, attempts to forward the setup message on the primary route; if the primary route is not usable due to congestion or physical failure, the node then attempts to forward the setup message on the alternate route; and if the alternate route is the same route on which the setup message is received, the node cranks the call back to a preceding node which either forwards the setup message over the alternate route defined in that node's routing table or again cranks the call back to a further preceding node.

This section of McAllister '218 discloses that each network node includes a local static routing table that provides next hop routing information to adjacent nodes. McAllister '218 does not disclose or suggest that the local static routing table includes a storage space to store an initial route from a source device to a destination device, as recited in claim 1. The nodes in McAllister '218 would not be considered source or destination devices. Source and destination devices in McAllister '218 are referred to as users in the McAllister '218 disclosure.

For at least the foregoing reasons, Appellants submit that the rejection of claim 1 under 35 U.S.C. § 102(e) based on McAllister '218 is improper. Accordingly, Appellants request that the rejection of claim 1 be reversed.

2. Claim 8.

Independent claim 8 is directed to a method for forwarding packets from a source device to a destination device in a network of interconnected elements including nodes and links. The method includes determining an initial route, where the initial route includes at least one alternative-route enabled node and at least one non-alternative-route-enabled node, the at least one alternative-route-enabled node and the at least one non-alternative-route-enabled node storing an initial route from the source device to the destination device; determining an alternative route by identifying the at least one alternative-route-enabled node in the initial route,

identifying downstream interconnected elements, and generating the alternative route based on the identified at least one alternative-route-enabled node and the identified downstream interconnected elements; forwarding packets on the initial route; detecting a failed element; and automatically forwarding packets on the alternative route without communicating with either the source or the destination. McAllister '218 does not disclose or suggest this combination of features.

For example, McAllister '218 does not disclose or suggest at least one alternative-route-enabled node and at least one non-alternative-route-enabled node. The Examiner relies on node A in Fig. 2 of McAllister '218 as allegedly corresponding to at least one alternative-route-enabled node and on nodes B and C in Figs. 1 and 2, respectively, of McAllister '218 as allegedly corresponding to at least one non-alternative-route-enabled node (Office Action, pg. 3). Appellants respectfully disagree with the Examiner's interpretation of McAllister '218.

As illustrated in Figs. 1 and 2 of McAllister '218, Node A connects to Node C via a primary route and connects to Node B via an alternate route. Thus, McAllister '218's Node A is an alternative-route-enabled node. Moreover, as clearly illustrated in Fig. 1, Node B connects to Node C via a primary route and connects to Node A via an alternate route. Thus, McAllister '218's Node B would be construed as an alternative-route-enabled node (since Node B has the capability of transmitting data via a primary route and an alternate path) and not, as alleged by the Examiner, a non-alternative-route-enabled node. As further illustrated in Fig. 2, Node C connects to Node D via a primary route and connects to Node B via an alternate route. Thus, McAllister '218's Node C would be construed as an alternative-route-enabled node (since Node C has the capability of transmitting data via a primary route and an alternate path) and not, as

alleged by the Examiner, a non-alternative-route-enabled node. Moreover, McAllister '218 specifically discloses that each node contains a local routing table 11 that contains information pertaining to a primary route and an alternate route (see, for example, col. 2, line 63, to col. 3, line 2). Clearly, McAllister '218's nodes are alternative-route-enabled nodes. The fact that instances may arise when Node B or Node C may temporarily need to use the alternate route (e.g., when a fault occurs on the primary route) does not render Node B and Node C as non-alternative-route-enabled nodes.

Since McAllister '218 does not disclose or suggest a non-alternative-route-enabled node, McAllister '218 cannot disclose or suggest determining an initial route, where the initial route includes at least one alternative-route-enabled node and at least one non-alternative-route-enabled node, as recited in claim 8.

Moreover, McAllister '218 cannot further disclose or suggest that the at least one alternative-route-enabled node and the at least one non-alternative-route-enabled node store an initial route from a source device to a destination device, as also recited in claim 8. The Examiner relies on col. 2, lines 30-45, col. 3, lines 11-24, and col. 4, lines 6-12, of McAllister '218 for allegedly disclosing this feature (Office Action, pg. 5). Appellants respectfully disagree with the Examiner's interpretation of McAllister '218.

At col. 2, lines 30-45, McAllister '218 discloses:

> network nodes, each network node having a local static routing tables providing next hop routing information to adjacent nodes, characterized in that said routing tables define a primary route and an alternate route to adjacent nodes; a network node receives a setup message for the call and searches its routing table for corresponding routing information; the node, based on the corresponding routing information, attempts to forward the setup message on the primary route; if the primary route is not usable due to congestion or physical failure, the node then attempts to forward the setup message on the alternate route; and if the alternate

> route is the same route on which the setup message is received, the node cranks the call back to a preceding node which either forwards the setup message over the alternate route defined in that node's routing table or again cranks the call back to a further preceding node.

This section of McAllister '218 discloses that each network node includes a local static routing table that provides next hop routing information to adjacent nodes. McAllister '218 does not disclose or suggest that the local static routing table includes a storage space to store an initial route from a source device to a destination device, as recited in claim 8. The nodes in McAllister '218 would not be considered source or destination devices. Source and destination devices in McAllister '218 are referred to as users in the McAllister '218 disclosure.

At col. 3, lines 11-25, McAllister '218 discloses:

> Node B detects that the Trunk Group in its Primary Route (via Node C) is down, so its Primary Route cannot be used. Node B also detects that its Alternate Route to User 2 is the same Route on which the setup message was received. Routing the call out the Alternate Route would therefore cause a loop and Node B therefore determines that it cannot forward the call to User 2 and clears the call back to Node A with a Release message indicating Crankback.
>
> Node A receives the Crankback message, notes that its Primary Route didn't work and forwards the call on its Alternate Route, as stored in its routing table 11, to Node C. Node C then forwards the call to User 2. Without Crankback, the Trunk Group failure between Node B and Node C would prevent User 1 from establishing an SVC to User 2.

This section of McAllister '218 discloses that Node B sends a Crankback message to Node A when its primary route is down and its alternate route is the same route on which a setup message was received. This section of McAllister '218 does not disclose or suggest that the at least one alternative-route-enabled node and the at least one non-alternative-route-enabled node store an initial route from a source device to a destination device, as recited in claim 8.

At col. 4, lines 6-12, McAllister '218 discloses:

> When the Setup message arrives at Node C from Node A, Node C determines that its Primary Route is inoperative, and forwards the call along its Alternate Route, to Node B. Node B sends the call along its primary route to Node A. Node A detects the routing loop and clears the call back to Node B in a Release message indicating Crankback. Node B then chooses its Alternate Route and forwards the call to Node D, which delivers the call to User 2.

This section of McAllister '218 discloses that Node A sends a Crankback message to Node B to instruct Node B to send the data via its alternate route. This section of McAllister '218 does not disclose or suggest the at least one alternative-route-enabled node and the at least one non-alternative-route-enabled node storing an initial route from a source device to a destination device, as recited in claim 8.

As indicated above, McAllister '218 specifically discloses that each node includes a local static routing table that provides next hop routing information to adjacent nodes (col. 2, lines 30-32). McAllister '218 does not disclose or suggest at least one alternative-route-enabled node and the at least one non-alternative-route-enabled node that store an initial route from a source device to a destination device, as recited in claim 8.

For at least the foregoing reasons, Appellants submit that the rejection of claim 8 under 35 U.S.C. § 102(e) based on McAllister '218 is improper. Accordingly, Appellants request that the rejection of claim 8 be reversed.

3. Claim 18.

Independent claim 18 is directed to a method for locally rerouting packets traveling on an established route when a node in a network of interconnected nodes fails. The method includes computing, at select intermediary nodes along the established route, an alternative route leading from the select intermediary node to the destination device of the established route; storing, at each of the select intermediary nodes, the alternative route; determining locally that the

established route has failed; and automatically forwarding packets on the alternative route. McAllister '218 does not disclose or suggest this combination of features.

For example, McAllister '218 does not disclose or suggest computing, at select intermediary nodes along the established route, an alternative route leading from the select intermediary node to the destination device of the established route. The Examiner relies on col. 2, lines 30-45, col. 3, lines 11-24, and col. 4, lines 6-12, of McAllister '218 for allegedly disclosing this feature (Office Action, pg. 6). Appellants respectfully disagree with the Examiner's interpretation of McAllister '218.

At col. 2, lines 30-45, McAllister '218 discloses:

> network nodes, each network node having a local static routing tables providing next hop routing information to adjacent nodes, characterized in that said routing tables define a primary route and an alternate route to adjacent nodes; a network node receives a setup message for the call and searches its routing table for corresponding routing information; the node, based on the corresponding routing information, attempts to forward the setup message on the primary route; if the primary route is not usable due to congestion or physical failure, the node then attempts to forward the setup message on the alternate route; and if the alternate route is the same route on which the setup message is received, the node cranks the call back to a preceding node which either forwards the setup message over the alternate route defined in that node's routing table or again cranks the call back to a further preceding node.

This section of McAllister '218 discloses that each network node includes a local static routing table that provides next hop routing information to adjacent nodes. This section of McAllister '218 does not disclose or suggest computing, at select intermediary nodes along an established route, an alternative route leading from the select intermediary node to a destination device of the established route, as recited in claim 18. In fact, this section of McAllister '218 does not relate to computing alternative routes to a destination device.

At col. 3, lines 11-25, McAllister '218 discloses:

> Node B detects that the Trunk Group in its Primary Route (via Node C) is down, so its Primary Route cannot be used. Node B also detects that its Alternate Route to User 2 is the same Route on which the setup message was received. Routing the call out the Alternate Route would therefore cause a loop and Node B therefore determines that it cannot forward the call to User 2 and clears the call back to Node A with a Release message indicating Crankback.
>
> Node A receives the Crankback message, notes that its Primary Route didn't work and forwards the call on its Alternate Route, as stored in its routing table 11, to Node C. Node C then forwards the call to User 2. Without Crankback, the Trunk Group failure between Node B and Node C would prevent User 1 from establishing an SVC to User 2.

This section of McAllister '218 discloses that Node B sends a Crankback message to Node A when its primary route is down and its alternate route is the same route on which a setup message was received. This section of McAllister '218 does not disclose or suggest computing, at select intermediary nodes along an established route, an alternative route leading from the select intermediary node to a destination device of the established route, as recited in claim 18. In fact, this section of McAllister '218 does not relate to computing alternative routes to a destination device.

At col. 4, lines 6-12, McAllister '218 discloses:

> When the Setup message arrives at Node C from Node A, Node C determines that its Primary Route is inoperative, and forwards the call along its Alternate Route, to Node B. Node B sends the call along its primary route to Node A. Node A detects the routing loop and clears the call back to Node B in a Release message indicating Crankback. Node B then chooses its Alternate Route and forwards the call to Node D, which delivers the call to User 2.

This section of McAllister '218 discloses that Node A sends a Crankback message to Node B to instruct Node B to send the data via its alternate route. This section of McAllister '218 does not disclose or suggest computing, at select intermediary nodes along an established route, an alternative route leading from the select intermediary node to a destination device of the

established route, as recited in claim 18. In fact, this section of McAllister '218 does not relate to computing alternative routes to a destination device.

Since McAllister '218 does not disclose or suggest computing, at select intermediary nodes along an established route, an alternative route leading from the select intermediary node to a destination device of the established route, McAllister '218 cannot disclose or suggest storing, at each of the select intermediary nodes, the alternative route leading from the select intermediary node to a destination node of the established route, as also recited in claim 18. The Examiner relies on col. 2, lines 30-45, col. 3, lines 11-24, and col. 4, lines 6-12, of McAllister '218 for allegedly disclosing this feature (Office Action, pg. 6). Appellants respectfully disagree with the Examiner's interpretation of McAllister '218.

Col. 2, lines 30-45, of McAllister '218 is reproduced above. This section of McAllister '218 discloses that each network node includes a local static routing table that provides next hop routing information to adjacent nodes. This section of McAllister '218 does not disclose or suggest storing, at each of the select intermediary nodes, the alternative route leading from the select intermediary node to a destination node of the established route, as recited in claim 18.

Col. 3, lines 11-25, of McAllister '218 is reproduced above. This section of McAllister '218 discloses that Node B sends a Crankback message to Node A when its primary route is down and its alternate route is the same route on which a setup message was received. This section of McAllister '218 does not disclose or suggest storing, at each of the select intermediary nodes, the alternative route leading from the select intermediary node to a destination node of the established route, as recited in claim 18.

Col. 4, lines 6-12, of McAllister '218 is reproduced above. This section of McAllister

'218 discloses that Node A sends a Crankback message to Node B to instruct Node B to send the data via its alternate route. This section of McAllister '218 does not disclose or suggest storing, at each of the select intermediary nodes, the alternative route leading from the select intermediary node to a destination node of the established route, as recited in claim 18.

For at least the foregoing reasons, Appellants submit that the rejection of claim 18 under 35 U.S.C. § 102(e) based on McAllister '218 is improper. Accordingly, Appellants request that the rejection of claim 18 be reversed.

4. Claim 24.

Independent claim 24 is directed to a network for forwarding packets from a source device to a destination device and including a plurality of intermediate network nodes. The plurality of intermediate network nodes includes at least one first node configured to store an initial route from the source device to the destination device and at least one alternative route from the source device to the destination device, detect a failure in a downstream network node in the initial route, and automatically forward a packet to a node on one of the at least one alternative route in response to detecting the failure; and at least one second node configured to store the initial route, detect a failure in a downstream network node in the initial route, and forward a failure message to an upstream first node in response to detecting the failure, the failure message causing the upstream first node to automatically forward a packet to a node on one of the at least one alternative route. McAllister '218 does not disclose or suggest this combination of features.

For example, McAllister '218 does not disclose or suggest at least one first node and at least one second node configured to store an initial route from a source device to a destination

device. The Examiner relies on col. 2, lines 30-45, col. 3, lines 11-24, and col. 4, lines 6-12, of McAllister '218 for allegedly disclosing these features (Office Action, pg. 6). Appellants respectfully disagree with the Examiner's interpretation of McAllister '218.

At col. 2, lines 30-45, McAllister '218 discloses:

> network nodes, each network node having a local static routing tables providing next hop routing information to adjacent nodes, characterized in that said routing tables define a primary route and an alternate route to adjacent nodes; a network node receives a setup message for the call and searches its routing table for corresponding routing information; the node, based on the corresponding routing information, attempts to forward the setup message on the primary route; if the primary route is not usable due to congestion or physical failure, the node then attempts to forward the setup message on the alternate route; and if the alternate route is the same route on which the setup message is received, the node cranks the call back to a preceding node which either forwards the setup message over the alternate route defined in that node's routing table or again cranks the call back to a further preceding node.

This section of McAllister '218 discloses that each network node includes a local static routing table that provides next hop routing information to adjacent nodes. This section of McAllister '218 does not disclose or suggest at least one first node and at least one second node configured to store an initial route from a source device to a destination device, as recited in claim 24. The nodes in McAllister '218 would not be considered source or destination devices. Source and destination devices in McAllister '218 are referred to as users in the McAllister '218 disclosure.

At col. 3, lines 11-25, McAllister '218 discloses:

> Node B detects that the Trunk Group in its Primary Route (via Node C) is down, so its Primary Route cannot be used. Node B also detects that its Alternate Route to User 2 is the same Route on which the setup message was received. Routing the call out the Alternate Route would therefore cause a loop and Node B therefore determines that it cannot forward the call to User 2 and clears the call back to Node A with a Release message indicating Crankback.
>
> Node A receives the Crankback message, notes that its Primary Route didn't work and forwards the call on its Alternate Route, as stored in its routing table 11, to

> Node C. Node C then forwards the call to User 2. Without Crankback, the Trunk Group failure between Node B and Node C would prevent User 1 from establishing an SVC to User 2.

This section of McAllister '218 discloses that Node B sends a Crankback message to Node A when its primary route is down and its alternate route is the same route on which a setup message was received. This section of McAllister '218 does not disclose or suggest at least one first node and at least one second node configured to store an initial route from a source device to a destination device, as recited in claim 24.

At col. 4, lines 6-12, McAllister '218 discloses:

> When the Setup message arrives at Node C from Node A, Node C determines that its Primary Route is inoperative, and forwards the call along its Alternate Route, to Node B. Node B sends the call along its primary route to Node A. Node A detects the routing loop and clears the call back to Node B in a Release message indicating Crankback. Node B then chooses its Alternate Route and forwards the call to Node D, which delivers the call to User 2.

This section of McAllister '218 discloses that Node A sends a Crankback message to Node B to instruct Node B to send the data via its alternate route. This section of McAllister '218 does not disclose or suggest at least one first node and at least one second node configured to store an initial route from a source device to a destination device, as recited in claim 24.

For at least the foregoing reasons, Appellants submit that the rejection of claim 24 under 35 U.S.C. § 102(e) based on McAllister '218 is improper. Accordingly, Appellants request that the rejection of claim 24 be reversed.

B. The rejection of claims 2, 3, 15 and 16 under 35 U.S.C. § 103(a) based on McAllister '218 and Rexford et al. should be reversed.

The initial burden of establishing a *prima facie* basis to deny patentability to a claimed

invention always rests upon the Examiner. In re Oetiker, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In rejecting a claim under 35 U.S.C. § 103, the Examiner must provide a factual basis to support the conclusion of obviousness. In re Warner, 379 F.2d 1011, 154 USPQ 173 (CCPA 1967). Based upon the objective evidence of record, the Examiner is required to make the factual inquiries mandated by Graham v. John Deere Co., 86 S.Ct. 684, 383 U.S. 1, 148 USPQ 459 (1966). The Examiner is also required to explain how and why one having ordinary skill in the art would have been realistically motivated to modify an applied reference and/or combine applied references to arrive at the claimed invention. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 5 USPQ2d 1434 (Fed. Cir. 1988).

In establishing the requisite motivation, it has been consistently held that the requisite motivation to support the conclusion of obviousness is not an abstract concept, but must stem from the prior art as a whole to impel one having ordinary skill in the art to modify a reference or to combine references with a reasonable expectation of successfully achieving some particular realistic objective. See, for example, Interconnect Planning Corp. v. Feil, 227 USPQ 543 (Fed. Cir. 1985). Consistent legal precedent admonishes against the indiscriminate combination of prior art references. Carella v. Starlight Archery, 804 F.2d 135, 231 USPQ 644 (Fed. Cir. 1986); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 227 USPQ 657 (Fed. Cir. 1985).

1. Claim 2.

Claim 2 depends from claim 1. The disclosure of Rexford et al. does not remedy the deficiencies in the disclosure of McAllister '218 set forth above with respect to claim 1. Therefore, claim 2 is patentable over McAllister '218 and Rexford et al., whether taken alone or

in any reasonable combination, for at least the reasons given above with respect to claim 1.

2. Claim 3.

Claim 3 depends from claim 2. Therefore, claim 3 is patentable over McAllister '218 and Rexford et al., whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 2. Moreover, claim 3 is patentable over McAllister '218 and Rexford et al. for reasons of its own.

Claim 3 recites that the plurality of nodes includes a label-switched router. The Examiner admits that McAllister '218 does not disclose this feature (Office Action, pg. 9). The Examiner relies on col. 1, lines 62-67, of Rexford et al. for disclosing this feature (Office Action, pg. 9). Appellants respectfully disagree with the Examiner's interpretation of Rexford et al.

At col. 1, lines 62-67, Rexford et al. discloses:

> Similarly, proposed QoS extensions to the OSPF ("Open Shortest Path First Routing") protocol include an "explicit routing" mechanism for source-directed IP ("Internet Protocol") routing. MPLS ("MultiProtocol Label Switching") includes a similar technique for constraint-based routing.

This section of Rexford et al. mentions MPLS. This section of Rexford et al. does not disclose or suggest a network that includes a plurality of nodes, where the plurality of nodes includes a label-switched router, as recited in claim 3.

Even assuming, for the sake of argument, that the above section of Rexford et al. can reasonably be construed as disclosing a plurality of nodes that includes a label-switched router (a point that Appellants do not concede), Appellants submit that one skilled in the art at the time of Appellants' invention would not have been motivated to incorporate this alleged teaching of Rexford et al. into the McAllister '218 system, absent impermissible hindsight. With respect to motivation, the Examiner alleges:

> it would have been obvious … to modify the system of McAllister et al. with the teaching of Rexford to provide the plurality of nodes includes a label switched router in order to compute, store, and allocate efficient routing connections between nodes in a network

(Office Action, pg. 9). Appellants submit that the Examiner's motivation is merely a conclusory statement regarding an alleged benefit. Such motivation statements are insufficient for establishing a *prima facie* case of obviousness. In this respect, Appellants rely upon In re Deuel, 51 F.3d 1552, 34 USPQ2d 1210 (Fed. Cir. 1995), where it was held that generalizations do not establish the realistic motivation to modify a specific reference in a specific manner to arrive at a specifically claimed invention. Appellants submit that the Examiner's purported motivation to combine the cited references is merely conclusory and based on impermissible hindsight.

Moreover, the Examiner does not explain why incorporating a label-switched router into the McAllister '218 system would allow McAllister '218's nodes to compute, store, and allocate efficient routing connections between nodes in a network. Appellants submit that the Examiner's motivation is unsupported by the McAllister '218 and Rexford et al. disclosures and is impermissibly based on hindsight reconstruction.

For at least the foregoing reasons, Appellants submit that the rejection of claim 3 under 35 U.S.C. § 103(a) based on McAllister '218 and Rexford et al. is improper. Accordingly, Appellants request that the rejection be reversed.

3. Claim 15.

Claim 15 depends from claim 8. The disclosure of Rexford et al. does not remedy the deficiencies in the disclosure of McAllister '218 set forth above with respect to claim 8. Therefore, claim 15 is patentable over McAllister '218 and Rexford et al., whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 8.

Moreover, claim 15 is patentable over McAllister '218 and Rexford et al. for reasons of its own.

Claim 15 recites that the determining an alternative route includes checking bandwidth allocation. The Examiner admits that McAllister '218 does not disclose this feature (Office Action, pg. 9). The Examiner relies on col. 16, lines 15-22, of Rexford et al. for disclosing this feature (Office Action, pg. 9). Appellants respectfully disagree with the Examiner's interpretation of Rexford et al.

At col. 16, lines 12-22, Rexford et al. discloses:

> To evaluate the cost-performance trade-offs of precomputed routes, an event-driven simulator that modeled link-state routing at the connection level was developed. The simulator operated by choosing a route for each incoming connection based on a throughput requirement (bandwidth b) and the available bandwidth in the network, based on the source's view of link-state information. Then, hop-by-hop signaling was employed to reserve the requested bandwidth at each link in the route. That is, if a link had a reserved bandwidth with utilization u, admitting the new connection increased the reservation to u=u+b.

This section of Rexford et al. discloses that a simulator evaluates pre-computed routes by choosing a route for each incoming connection based on bandwidth. This section of Rexford et al. in no way relates to determining an alternative route that includes checking bandwidth allocation, as recited in claim 15.

Even assuming, for the sake of argument, that the above section of Rexford et al. can reasonably be construed as disclosing determining an alternative route that includes checking bandwidth allocation (a point that Appellants do not concede), Appellants submit that one skilled in the art at the time of Appellants' invention would not have been motivated to incorporate this alleged teaching of Rexford et al. into the McAllister '218 system, absent impermissible hindsight. With respect to motivation, the Examiner alleges:

> it would have been obvious ... to modify the system of McAllister et al. with the teaching of Rexford to provide the determining the alternative route comprises bandwidth allocation in order to compute, store, and allocate efficient routing connections between nodes in a network

(Office Action, pp. 9-10). Appellants submit that the Examiner's motivation is merely a conclusory statement regarding an alleged benefit. Such motivation statements are insufficient for establishing a *prima facie* case of obviousness. In this respect, Appellants rely upon In re Deuel, 51 F.3d 1552, 34 USPQ2d 1210 (Fed. Cir. 1995), where it was held that generalizations do not establish the realistic motivation to modify a specific reference in a specific manner to arrive at a specifically claimed invention. Appellants submit that the Examiner's purported motivation to combine the cited references is merely conclusory and based on impermissible hindsight.

Moreover, the Examiner does not explain why incorporating determining an alternative route that includes checking bandwidth allocation into the McAllister '218 system would allow McAllister '218's nodes to compute, store, and allocate efficient routing connections between nodes in a network. Appellants submit that the Examiner's motivation is unsupported by the McAllister '218 and Rexford et al. disclosures and is impermissibly based on hindsight reconstruction.

For at least the foregoing reasons, Appellants submit that the rejection of claim 15 under 35 U.S.C. § 103(a) based on McAllister '218 and Rexford et al. is improper. Accordingly, Appellants request that the rejection be reversed.

4. Claim 16.

Claim 16 depends from claim 15. Therefore, claim 16 is patentable over McAllister '218 and Rexford et al., whether taken alone or in any reasonable combination, for at least the reasons

given above with respect to claim 15. Moreover, claim 16 is patentable over McAllister '218 and Rexford et al. for reasons of its own.

Claim 16 recites that the checking bandwidth allocation includes dynamically balancing capacity of nodes and links. The Examiner admits that McAllister '218 does not disclose this feature (Office Action, pg. 10). The Examiner relies on col. 5, lines 34-35, of Rexford et al. for disclosing this feature (Office Action, pg. 10). Appellants respectfully disagree with the Examiner's interpretation of Rexford et al.

At col. 5, lines 34-37, Rexford et al. discloses:

> Path precomputation schemes benefit from having multiple candidate routes to each destination to balance network load and have additional routing choices in the case of signaling failure.

This section of Rexford et al. in no way relates to determining an alternative route that includes checking bandwidth allocation, which includes dynamically balancing capacity of nodes and links, as recited in claim 16. In fact, this section of Rexford et al. does not even relate to the simulator on which the Examiner relies for allegedly disclosing the checking bandwidth allocation.

Even assuming, for the sake of argument, that the above section of Rexford et al. can reasonably be construed as disclosing that determining an alternative route includes checking bandwidth allocation, which includes dynamically balancing capacity of nodes and links (a point that Appellants do not concede), Appellants submit that one skilled in the art at the time of Appellants' invention would not have been motivated to incorporate this alleged teaching of Rexford et al. into the McAllister '218 system, absent impermissible hindsight. With respect to motivation, the Examiner alleges:

> it would have been obvious … to modify the system of McAllister et al. with the teaching of Rexford to provide checking bandwidth allocation comprises dynamically balancing capacity of nodes and links in order to compute, store, and allocate efficient routing connections between nodes in a network

(Office Action, pg. 10). Appellants submit that the Examiner's motivation is merely a conclusory statement regarding an alleged benefit. Such motivation statements are insufficient for establishing a *prima facie* case of obviousness. In this respect, Appellants rely upon In re Deuel, 51 F.3d 1552, 34 USPQ2d 1210 (Fed. Cir. 1995), where it was held that generalizations do not establish the realistic motivation to modify a specific reference in a specific manner to arrive at a specifically claimed invention. Appellants submit that the Examiner's purported motivation to combine the cited references is merely conclusory and based on impermissible hindsight.

Moreover, the Examiner does not explain why incorporating determining an alternative route that includes checking bandwidth allocation, which includes dynamically balancing capacity of nodes and links into the McAllister '218 system would allow McAllister '218's nodes to compute, store, and allocate efficient routing connections between nodes in a network. Appellants submit that the Examiner's motivation is unsupported by the McAllister '218 and Rexford et al. disclosures and is impermissibly based on hindsight reconstruction.

For at least the foregoing reasons, Appellants submit that the rejection of claim 16 under 35 U.S.C. § 103(a) based on McAllister '218 and Rexford et al. is improper. Accordingly, Appellants request that the rejection be reversed.

C. The rejection of claims 4, 6, 11-13, 17, 19 and 21 under 35 U.S.C. § 103(a) based on McAllister '218 in view of Masuro et al. (U.S. Patent No. 6,122,753) should be reversed.

1. Claim 4.

Claim 4 depends from claim 1. The disclosure of Masuro et al. does not remedy the deficiencies in the disclosure of McAllister '218 set forth above with respect to claim 1. Therefore, claim 4 is patentable over McAllister '218 and Masuro et al., whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 1.

2. Claim 6.

Claim 6 depends from claim 1. The disclosure of Masuro et al. does not remedy the deficiencies in the disclosure of McAllister '218 set forth above with respect to claim 1. Therefore, claim 6 is patentable over McAllister '218 and Masuro et al., whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 1. Moreover, claim 6 is patentable over McAllister '218 and Masuro et al. for reasons of its own.

Claim 6 recites that the mechanism to detect failure sends communication packets to downstream nodes at regular intervals. The Examiner admits that McAllister '218 does not disclose this feature (Office Action, pg. 11). The Examiner relies on Fig. 12 and col. 27, lines 45-47, of Masuro et al. for allegedly disclosing the feature of claim 6 (Office Action, pg. 11). Appellants respectfully disagree with the Examiner's interpretation of Masuro et al.

Fig. 12 of Masuro et al. depicts the message flow of a fault recovery system. This figure of Masuro et al. does not disclose or suggest a mechanism to detect failure in a downstream network element that sends communication packets to downstream nodes at regular intervals, as recited in claim 6.

At col. 27, lines 45-47, Masuro et al. discloses:

> Thus, another path of the currently present connection per a certain period is computed. The path having better quality than that of the current path can be retrieved, path switching process is performed.

This section of Masuro et al. merely discloses that another path is computed. This section of Masuro et al. in no way discloses or suggests a mechanism to detect failure in a downstream network element that sends communication packets to downstream nodes at regular intervals, as recited in claim 6.

Even assuming, for the sake of argument, that that the above section of Masuro et al. can reasonably be construed to disclose a mechanism to detect failure in a downstream network element that sends communication packets to downstream nodes at regular intervals (a point that Appellants do not concede), Appellants submit that one skilled in the art at the time of Appellants' invention would not have been motivated to incorporate this alleged teaching of Rexford et al. into the McAllister '218 system, absent impermissible hindsight. With respect to motivation, the Examiner alleges:

> it would have been obvious … to modify the system of McAllister et al. with the teaching of Masuro to provide detecting failure sends communication packets to downstream nodes at regular intervals in order to recover faulty connection in switching

(Office Action, pp. 11-12). Appellants submit that the Examiner's motivation is merely a conclusory statement regarding an alleged benefit. Such motivation statements are insufficient for establishing a *prima facie* case of obviousness. In this respect, Appellants rely upon In re Deuel, 51 F.3d 1552, 34 USPQ2d 1210 (Fed. Cir. 1995), where it was held that generalizations do not establish the realistic motivation to modify a specific reference in a specific manner to arrive at a specifically claimed invention. Appellants submit that the Examiner's purported motivation to combine the cited references is merely conclusory and based on impermissible

hindsight.

For at least the foregoing reasons, Appellants submit that the rejection of claim 6 under 35 U.S.C. § 103(a) based on McAllister '218 and Masuro et al. is improper. Accordingly, Appellants request that the rejection be reversed.

3. Claim 11.

Claim 11 depends from claim 8. The disclosure of Masuro et al. does not remedy the deficiencies in the disclosure of McAllister '218 set forth above with respect to claim 8. Therefore, claim 11 is patentable over McAllister '218 and Masuro et al., whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 8. Moreover, claim 11 is patentable over McAllister '218 and Masuro et al. for reasons of its own.

Claim 11 recites that the determining the alternative route comprises determining a shortest route from a node preceding the failed element to the destination device within the network; refining the route to exclude the failed element on the initial route; and establishing the alternative route for forwarding packets. The Examiner admits that McAllister '218 does not disclose this feature (Office Action, pg. 12). The Examiner relies on col. 4, lines 4-6, col. 5, lines 50-53, col. 11, lines 56-60, col. 13, lines 30-25, col. 22, lines 60-67, col. 28, lines 18-20, and col. 29, lines 49-50, of Masuro et al. for allegedly disclosing "determining a shortest route from a node preceding the failed element to the destination device within the network" (Office Action, pg. 12). Appellants respectfully submit that the Examiner has not established a *prima facie* case of obviousness with respect to claim 11.

The Examiner does not address the specifically recited features of claim 11. Claim 11 does not merely recite determining a shortest route from a node preceding the failed element to

the destination device within the network. Instead, claim 11 specifically recites determining a shortest route from a node preceding the failed element to the destination device within the network; refining the route to exclude the failed element on the initial route; and establishing the alternative route for forwarding packets. The Examiner does not address this combination of features. As such, the Examiner has not established a *prima facie* case of obviousness with respect to claim 11. Appellants submit that the above sections of Masuro et al. do not disclose or suggest the combination of features recited in claim 11.

For at least the foregoing reasons, Appellants submit that the rejection of claim 11 under 35 U.S.C. § 103(a) based on McAllister '218 and Masuro et al. is improper. Accordingly, Appellants request that the rejection be reversed.

4. Claim 12.

Claim 12 depends from claim 8. The disclosure of Masuro et al. does not remedy the deficiencies in the disclosure of McAllister '218 set forth above with respect to claim 8. Therefore, claim 12 is patentable over McAllister '218 and Masuro et al., whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 8.

5. Claim 13.

Claim 13 depends from claim 8. The disclosure of Masuro et al. does not remedy the deficiencies in the disclosure of McAllister '218 set forth above with respect to claim 8. Therefore, claim 13 is patentable over McAllister '218 and Masuro et al., whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 8. Moreover, claim 13 is patentable over McAllister '218 and Masuro et al. for reasons of its own.

Claim 13 recites that determining the alternative route comprises reserving bandwidth

available on the initial route; generating the alternative route by invoking a routing protocol; refining the alternative route by excluding the failed element; and establishing the alternative route. McAllister '218 and Masuro et al. do not disclose or suggest this combination of features.

For example, McAllister '218 and Masuro et al. do not disclose or suggest that determining an alternative route comprises reserving bandwidth available on an initial route. The Examiner relies on col. 1, lines 20-21, of McAllister '218 for allegedly disclosing this feature (Office Action, pg. 13). Appellants respectfully disagree with the Examiner's interpretation of McAllister '218.

At col. 1, lines 20-21, McAllister '218 discloses:

> In circuit switched networks, bandwidth is reserved for each circuit by the network operator.

This section of McAllister '218 does not relate to determining an alternative route that comprises reserving bandwidth available on an initial route, as recited in claim 13. Furthermore, the disclosure of Masuro et al. does not remedy the above deficiency in the disclosure of McAllister '218.

For at least the foregoing reasons, Appellants submit that the rejection of claim 13 under 35 U.S.C. § 103(a) based on McAllister '218 and Masuro et al. is improper. Accordingly, Appellants request that the rejection be reversed.

6. Claim 17.

Claim 17 depends from claim 8. The disclosure of Masuro et al. does not remedy the deficiencies in the disclosure of McAllister '218 set forth above with respect to claim 8. Therefore, claim 17 is patentable over McAllister '218 and Masuro et al., whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 8.

Moreover, claim 17 is patentable over McAllister '218 and Masuro et al. for reasons of its own.

Claim 17 recites that determining the alternative route comprises reserving bandwidth available on the initial route; identifying a plurality of nodes associated with the failed element according to network configuration information; generating the alternative route excluding the failed element and the plurality of nodes; establishing the alternative route. McAllister '218 and Masuro et al. do not disclose or suggest this combination of features.

For example, McAllister '218 and Masuro et al. do not disclose or suggest that determining an alternative route comprises reserving bandwidth available on an initial route. The Examiner relies on col. 1, lines 20-21, of McAllister '218 for allegedly disclosing this feature (Office Action, pg. 13). Appellants respectfully disagree with the Examiner's interpretation of McAllister '218.

At col. 1, lines 20-21, McAllister '218 discloses:

> In circuit switched networks, bandwidth is reserved for each circuit by the network operator.

This section of McAllister '218 does not relate to determining an alternative route that comprises reserving bandwidth available on an initial route, as recited in claim 17. Furthermore, the disclosure of Masuro et al. does not remedy the above deficiency in the disclosure of McAllister '218.

For at least the foregoing reasons, Appellants submit that the rejection of claim 17 under 35 U.S.C. § 103(a) based on McAllister '218 and Masuro et al. is improper. Accordingly, Appellants request that the rejection be reversed.

7. Claim 19.

Claim 19 depends from claim 18. The disclosure of Masuro et al. does not remedy the

deficiencies in the disclosure of McAllister '218 set forth above with respect to claim 18. Therefore, claim 19 is patentable over McAllister '218 and Masuro et al., whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 18. Moreover, claim 19 is patentable over McAllister '218 and Masuro et al. for reasons of its own.

Claim 19 recites that computing the alternative route comprises reserving bandwidth available on the established route; identifying a plurality of nodes associated with the failed node according to network configuration information; generating the alternative route excluding the failed node and the plurality of nodes; and establishing the alternative route. McAllister '218 and Masuro et al. do not disclose or suggest this combination of features.

For example, McAllister '218 and Masuro et al. do not disclose or suggest that computing an alternative route comprises reserving bandwidth available on an established route. The Examiner relies on col. 1, lines 20-21, of McAllister '218 for allegedly disclosing this feature (Office Action, pp. 13-14). Appellants respectfully disagree with the Examiner's interpretation of McAllister '218.

At col. 1, lines 20-21, McAllister '218 discloses:

> In circuit switched networks, bandwidth is reserved for each circuit by the network operator.

This section of McAllister '218 does not relate to computing an alternative route that comprises reserving bandwidth available on an established route, as recited in claim 19. Furthermore, the disclosure of Masuro et al. does not remedy the above deficiency in the disclosure of McAllister '218.

For at least the foregoing reasons, Appellants submit that the rejection of claim 19 under 35 U.S.C. § 103(a) based on McAllister '218 and Masuro et al. is improper. Accordingly,

Appellants request that the rejection be reversed.

8. Claim 21.

Claim 21 depends from claim 18. The disclosure of Masuro et al. does not remedy the deficiencies in the disclosure of McAllister '218 set forth above with respect to claim 18. Therefore, claim 21 is patentable over McAllister '218 and Masuro et al., whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 18.

D. The rejection of claims 9, 14 and 20 under 35 U.S.C. § 103(a) based on McAllister '218 in view of Cheng should be reversed.

1. Claim 9.

Claim 9 depends from claim 8. The disclosure of Cheng does not remedy the deficiencies in the disclosure of McAllister '218 set forth above with respect to claim 8. Therefore, claim 9 is patentable over McAllister '218 and Cheng, whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 8. Moreover, this claim is patentable over McAllister '218 and Cheng for reasons of its own.

Claim 9 recites that the determining the initial route includes determining a short path from the destination device to the source device within the network; refining the path according to administrative constraints; and establishing the path as the initial route. The Examiner admits that McAllister '218 does not disclose these features (Office Action, pg. 15). The Examiner relies on col. 12, lines 20-22, of Cheng for allegedly disclosing the features of claim 9 (Office Action, pg. 15). Appellants respectfully disagree with the Examiner's interpretation of Cheng.

At col. 12, lines 19-22, Cheng discloses:

> As shown in Table 2, this path has an aggregate cost of only 22 cost units (10+12) and is the shortest (i.e., least-cost) path within network 70 between switches 72 and 76.

This section of Cheng does not disclose or suggest determining an initial route that includes determining a short path from the destination device to the source device within the network; refining the path according to administrative constraints; and establishing the path as the initial route, as recited in claim 9.

Even assuming, for the sake of argument, that that the above section of Cheng can reasonably be construed to disclose determining a short path from the destination device to the source device within the network; refining the path according to administrative constraints; and establishing the path as the initial route (a point that Appellants do not concede), Appellants submit that one skilled in the art at the time of Appellants' invention would not have been motivated to incorporate this alleged teaching of Cheng into the McAllister '218 system, absent impermissible hindsight. With respect to motivation, the Examiner alleges:

> it would have been obvious … to modify the system of McAllister et al. with the teaching of Cheng to provide determining a short path from the destination device to the source device within the network, refining the path according to administrative constraints in order to select routing paths through networks

(Office Action, pg. 15). Appellants submit that the Examiner's motivation is merely a conclusory statement regarding an alleged benefit. Such motivation statements are insufficient for establishing a *prima facie* case of obviousness. In this respect, Appellants rely upon In re Deuel, 51 F.3d 1552, 34 USPQ2d 1210 (Fed. Cir. 1995), where it was held that generalizations do not establish the realistic motivation to modify a specific reference in a specific manner to arrive at a specifically claimed invention. Appellants submit that the Examiner's purported motivation to combine the cited references is merely conclusory and based on impermissible hindsight.

For at least the foregoing reasons, Appellants submit that the rejection of claim 9 under 35 U.S.C. § 103(a) based on McAllister '218 and Cheng is improper. Accordingly, Appellants request that the rejection be reversed.

2. Claim 14.

Independent claim 14 is directed a method for forwarding packets from a source device to a destination device in a network of interconnected elements including nodes and links. The method comprises determining an initial route by determining a short path from the destination device to the source device within the network, refining the path according to administrative constraints, and establishing the path as the initial route, the initial route being prioritized to establish a hierarchy for preemption in routing network traffic; determining an alternative route; forwarding packets on the initial route; detecting a failed element; and automatically forwarding packets on the alternative route without communicating with either the source or the destination. McAllister '218 and Cheng, whether taken alone or in any reasonable combination, do not disclose or suggest this combination of features.

For example, McAllister '218 and Cheng do not disclose or suggest determining an initial route by determining a short path from the destination device to the source device within the network, refining the path according to administrative constraints, and establishing the path as the initial route, the initial route being prioritized to establish a hierarchy for preemption in routing network traffic. The Examiner admits that McAllister '218 does not disclose these features (Office Action, pg. 16). The Examiner relies on col. 12, lines 20-22 and 42-46, of Cheng for allegedly disclosing the above features of claim 14 (Office Action, pg. 16). Appellants respectfully disagree with the Examiner's interpretation of Cheng.

At col. 12, lines 19-22 and 42-46, Cheng discloses:

> As shown in Table 2, this path has an aggregate cost of only 22 cost units (10+12) and is the shortest (i.e., least-cost) path within network 70 between switches 72 and 76.
>
> Although the example above assumed that only one link exists between each switch of network 70, real-world networks often provide multiple links between switches and other nodes. For example, redundant links between switches may be provided to guard against network failures in the event a link is damaged or destroyed. The graphical representation for SPT 120 may accommodate an arbitrary number of alternative links between any two nodes to adapt to such networks.

These sections of Cheng do not disclose or suggest determining an initial route by determining a short path from the destination device to the source device within the network, refining the path according to administrative constraints, and establishing the path as the initial route, the initial route being prioritized to establish a hierarchy for preemption in routing network traffic, as recited in claim 14.

Even assuming, for the sake of argument, that that the above sections of Cheng can reasonably be construed to disclose determining an initial route by determining a short path from the destination device to the source device within the network, refining the path according to administrative constraints, and establishing the path as the initial route, the initial route being prioritized to establish a hierarchy for preemption in routing network traffic (a point that Appellants do not concede), Appellants submit that one skilled in the art at the time of Appellants' invention would not have been motivated to incorporate this alleged teaching of Cheng into the McAllister '218 system, absent impermissible hindsight. With respect to motivation, the Examiner alleges:

> it would have been obvious … to modify the system of McAllister et al. with the teaching of Cheng to provide determining an initial route by determining a short

> path from the destination device to the source device within the network, refining the path according to administrative constraints, and establishing the path as the initial route, the initial route being prioritized to establish a hierarchy for preemption in routing network traffic in order to select routing paths through networks

(Office Action, pp. 16-17). Appellants submit that the Examiner's motivation is merely a conclusory statement regarding an alleged benefit. Such motivation statements are insufficient for establishing a *prima facie* case of obviousness. In this respect, Appellants rely upon In re Deuel, 51 F.3d 1552, 34 USPQ2d 1210 (Fed. Cir. 1995), where it was held that generalizations do not establish the realistic motivation to modify a specific reference in a specific manner to arrive at a specifically claimed invention. Appellants submit that the Examiner's purported motivation to combine the cited references is merely conclusory and based on impermissible hindsight.

For at least the foregoing reasons, Appellants submit that the rejection of claim 14 under 35 U.S.C. § 103(a) based on McAllister '218 and Cheng is improper. Accordingly, Appellants request that the rejection of claim 14 be reversed.

3. Claim 20.

At the outset, Appellants respectfully submit that the rejection of claim 20 is improper. Claim 20 depends from claim 19. Claim 19 was rejected under 35 U.S.C. § 103(a) based on McAllister '218 and Masuro et al. Therefore, any rejection of claim 20 must be based on McAllister '218 and Masuro et al. However, the Examiner rejects claim 20 under 35 U.S.C. § 103(a) based on McAllister '218 and Cheng. Therefore, the rejection of claim 20 is improper.

The disclosure of Cheng does not remedy the deficiencies in the disclosures of McAllister '218 and Masuro et al. set forth above with respect to claim 19. Therefore, claim 20 is patentable

over McAllister '218, Masuro et al., and Cheng, whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 19.

E. The rejection of claim 10 under 35 U.S.C. § 103(a) based on McAllister '218 in view of Cheng, and further in view of Cosares et al. should be reversed.

1. Claim 10.

Claim 10 depends from claim 9. The disclosure of Cosares et al. does not remedy the deficiencies in the disclosures of McAllister '218 and Cheng set forth above with respect to claim 9. Therefore, claim 10 is patentable over McAllister '218, Cheng, and Cosares et al., whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 9. Moreover, this claim is patentable over McAllister '218, Cheng, and Cosares et al. for reasons of its own.

Claim 10 recites that refining a short path comprises rejecting a path exceeding bandwidth allocation and hop limit. The Examiner admits that McAllister '218 and Cheng do not disclose this feature (Office Action, pg. 18). The Examiner relies on col. 15, lines 15-17 of Cosares et al. for allegedly disclosing the above feature of claim 10 (Office Action, pg. 18). Appellants respectfully disagree with the Examiner's interpretation of Cosares et al.

At col. 15, lines 14-17, Cosares et al. discloses:

> Turning now to step 112 of FIG. 4, the next node added to the COI must meet the hop limit, meaning that the shortest path between it and at least one of the nodes already in the COI must meet the hop limit.

This section of Cosares et al. discloses that a node added to a community of interest (COI) must meet a hop limit. This section of Cosares et al. does not disclose or suggest that refining a short path comprises rejecting a path exceeding bandwidth allocation and hop limit, as recited in claim

10.

Even assuming, for the sake of argument, that that the above section of Cosares et al. can reasonably be construed to disclose that refining a short path comprises rejecting a path exceeding bandwidth allocation and hop limit (a point that Appellants do not concede), Appellants submit that one skilled in the art at the time of Appellants' invention would not have been motivated to incorporate this alleged teaching of Cosares et al. into the McAllister '218 and Cheng systems, absent impermissible hindsight. With respect to motivation, the Examiner alleges:

> it would have been obvious … to modify the combined system (McAllister – Roginsky) with the teaching of Cosares to provide refining the path comprises rejecting the path exceeding hop limit in order to minimize the bandwidth on each ring sub-component

(Office Action, pg. 18). Appellants submit that the Examiner's motivation is merely a conclusory statement regarding an alleged benefit. Such motivation statements are insufficient for establishing a *prima facie* case of obviousness. In this respect, Appellants rely upon In re Deuel, 51 F.3d 1552, 34 USPQ2d 1210 (Fed. Cir. 1995), where it was held that generalizations do not establish the realistic motivation to modify a specific reference in a specific manner to arrive at a specifically claimed invention. Appellants submit that the Examiner's purported motivation to combine the cited references is merely conclusory and based on impermissible hindsight.

For at least the foregoing reasons, Appellants submit that the rejection of claim 10 under 35 U.S.C. § 103(a) based on McAllister '218, Cheng, and Cosares et al. is improper. Accordingly, Appellants request that the rejection of claim 10 be reversed.

F. The rejection of claims 1, 8, 18 and 24 under 35 U.S.C. § 103(a) based on Haskin et al. in view of McAllister '329 should be reversed.

1. Claim 1.

Claim 1 is directed to a network for forwarding packets from a source device to a destination device, where the network includes a plurality of network elements including a plurality of nodes and connecting links. The plurality of nodes includes at least one alternative-route-enabled node and at least one non-alternative-route-enabled node. The at least one non-alternative-route-enabled node comprises a storage space to store an initial route from the source device to the destination device; a mechanism to detect failure in a downstream network element in the initial route; and a forwarder to automatically forward a failure message upstream along the initial route to an alternative-route-enabled node, where the failure message causes the alternative-route-enabled node to begin forwarding packets on an alternative route. Haskin et al. and McAllister '329, whether taken alone or in any reasonable combination, do not disclose or suggest this combination of features.

For example, Haskin et al. and McAllister '329 do not disclose or suggest a plurality of nodes including at least one alternative-route-enabled node and at least one non-alternative-route-enabled node. The Examiner relies on element 1 in Fig. 1 of Haskin et al. as allegedly corresponding to at least one alternative-route-enabled node and on element 3 or 5 in Fig. 1 of Haskin et al. as allegedly corresponding to at least one non-alternative-route-enabled node (Office Action, pg. 19). Appellants respectfully disagree with the Examiner's interpretation of the disclosure of Haskin et al.

Element 1 in Fig. 1 of Haskin et al. corresponds to a switch. As clearly illustrated in Fig. 1, switch 1 has the ability to transfer data over a primary path 13 and an alternative path 12.

Thus, switch 1 would be construed as an alternative-route-enabled node. Elements 3 and 5 in Fig. 1 of Haskin et al. also correspond to switches. As clearly illustrated in Fig. 1, switches 3 and 5 have the ability to transfer data over a primary path 35 and 57, respectively, and an alternative path 34 and 56, respectively. Thus, switches 3 and 5 would also be construed as alternative-route-enabled nodes. The Examiner does not explain why one skilled in the art could reasonably construe switches 3 and 5 to be non-alternative-route-enabled nodes when Haskin et al. specifically discloses that alternative routes are provided for switches 3 and 5 (see, for example, col. 3, lines 4-9).

While the Examiner appears to rely on Haskin et al. for allegedly disclosing a non-alternative-route-enabled node, the Examiner also appears to admit that Haskin et al. does not disclose this feature by relying on McAllister '329 for allegedly disclosing a non-alternative-route-enabled node (see, for example, Office Action, pp. 20-21). In particular, the Examiner relies on element 32A in McAllister '329 as allegedly corresponding to an alternative-route-enabled node, on element 32B in McAllister '329 as allegedly corresponding to a non-alternative-route-enabled node (Office Action, pp. 20-21). Appellants respectfully disagree with the Examiner's interpretation of McAllister '329.

Element 32A in McAllister '329 corresponds to an ingress node (see, for example, col. 8, lines 26-31) and element 32B corresponds to a node, which is attached to ingress node 32A (see, for example, Figs. 2A and 2B, and col. 6, lines 10-12). McAllister '329 in no way discloses or suggests that node 32B is a non-alternative-route-enabled node. In stark contrast, McAllister '329 specifically discloses that node 32B may transmit data via two separate paths (see, for example, col. 7, lines 35-49, where McAllister '329 specifically discloses that operator directed

route (ODR) soft permanent virtual circuits (SPVCs) can be established through a primary route including node 32A; node 32B, line 36BC; node 32C; and 32D, and an alternate route including node 32A; node 32B, line 36BC'; node 32C; and 32D). Thus, node 32B is capable of transmitting data via two separate routes (a primary route and an alternative route). Therefore, node 32B would be construed as an alternative-route-enabled node and not, as alleged by the Examiner, a non-alternative-route-enabled node.

Even assuming, for the sake of argument, that one skilled in the art at the time of Appellants' invention could reasonably construe McAllister '329's node 32B as a non-alternative-route-enabled node (a point that Appellants do not concede), Appellants submit that McAllister '329 does not disclose or suggest that node 32B includes a storage space to store an initial route from a source device to a destination device, as required by claim 1. The Examiner relies on cols. 45-57, of McAllister '329 for allegedly disclosing a non-alternative-route-enabled node that includes a storage space to store an initial route from a source device to a destination device. At the outset, Appellants note that the McAllister '329 document does not include columns numbered 45-57. Appellants continue to note this typographical error.

Nonetheless, McAllister '329's Fig. 5 depicts a relational database structure 52 that is used by a network node 32 to keep track of ODR SPVCs managed by that network node 32 (col. 13, lines 35-37). McAllister '329 appears to disclose that ingress node 32A manages the ODR SPVCs of network 30 (see, for example, col. 9, lines 6-21, where McAllister '329 specifically discloses that ingress node 32A stores the configuration data for and initiates the ODR SPVC and that the nature of the ODR SPVC is transparent to the remainder of network 30). The Examiner has not pointed to any section of McAllister '329 that discloses or suggests that node 32B

includes a storage space to store an initial route from a source device to a destination device, as recited in claim 1.

Moreover, McAllister '329 does not disclose or suggest that relational database structure 52 stores an initial route from a source device to a destination device, as recited in claim 1. Instead, McAllister '329 specifically discloses that relational database structure 52 stores an indexed table 54 of P-NNI network node identifiers, and an indexed table 56 of compressed ODR SPVC designated transit lists (DTLs) and an ODR SPVC list 58. McAllister '329 does not disclose or suggest that relational database structure 52 stores an initial route from a source device to a destination device, as recited in claim 1.

Even assuming, for the sake of argument, that the disclosure of McAllister '329 can reasonably be construed to disclose a non-alternative-enabled node that includes a storage space to store an initial route from a source device to a destination device, as recited in claim 1 (a point that Appellants do not concede), Appellants submit that one skilled in the art would not have been motivated to incorporate this alleged teaching of McAllister '329 into the Haskin et al. system, absent impermissible hindsight.

With respect to motivation, the Examiner alleges:

> it would have been obvious … to modify the system of Haskin with the teaching of McAllister to provide a storage space to store an initial route from a source device to a destination device in order to reduce the probability of packet loss in a network

(Office Action, pg. 22). Appellants submit that the Examiner's motivation is merely a conclusory statement regarding an alleged benefit of the combination. Such motivation statements have consistently been found to be insufficient for establishing a *prima facie* case of obviousness. In this respect, Appellants rely upon In re Deuel, 51 F.3d 1552, 34 USPQ2d 1210 (Fed. Cir. 1995),

where it was held that generalizations do not establish the realistic motivation to modify a specific reference in a specific manner to arrive at a specifically claimed invention. Appellants submit that the Examiner's purported motivation to combine the cited references is merely conclusory and based on impermissible hindsight.

For at least the foregoing reasons, Appellants submit that the rejection of claim 1 under 35 U.S.C. § 103(a) based on Haskin et al. and McAllister '329 is improper. Accordingly, Appellants request that the rejection of claim 1 be reversed.

2. Claim 8.

Claim 8 is directed to a method for forwarding packets from a source device to a destination device in a network of interconnected elements including nodes and links. The method includes determining an initial route, the initial route including at least one alternative-route enabled node and at least one non-alternative-route-enabled node, the at least one alternative-route-enabled node and the at least one non-alternative-route-enabled node storing an initial route from the source device to the destination device; determining an alternative route by identifying the at least one alternative-route-enabled node in the initial route, identifying downstream interconnected elements, and generating the alternative route based on the identified at least one alternative-route-enabled node and the identified downstream interconnected elements; forwarding packets on the initial route; detecting a failed element; and automatically forwarding packets on the alternative route without communicating with either the source or the destination. Haskin et al. and McAllister '329, whether taken alone or in any reasonable combination, do not disclose or suggest this combination of features.

For example, Haskin et al. and McAllister '329 do not disclose or suggest determining an

initial route including at least one alternative-route enabled node and at least one non-alternative-route-enabled node, where the at least one alternative-route-enabled node and the at least one non-alternative-route-enabled node store the initial route from the source device to the destination device. The Examiner appears to admit that Haskin et al. does not disclose this feature of claim 8 (Office Action, pg. 23). The Examiner relies on Fig. 5 and col. 13, lines 35-67, of McAllister '329 for allegedly disclosing determining an initial route including at least one alternative-route enabled node and at least one non-alternative-route-enabled node, where the at least one alternative-route-enabled node and the at least one non-alternative-route-enabled node store the initial route from the source device to the destination device (Office Action, pg. 25). Appellants respectfully disagree with the Examiner's interpretation of McAllister '329.

At the outset, Appellants submit that McAllister '329 does not disclose or suggest an initial route that includes at least one alternative-route-enabled node and at least one non-alternative-route-enabled node. The Examiner relies on element 32A in McAllister '329 as allegedly corresponding to an alternative-route-enabled node, and on element 32B in McAllister '329 as allegedly corresponding to a non-alternative-route-enabled node (Office Action, pg. 24). Appellants respectfully disagree with the Examiner's interpretation of McAllister '329.

Element 32A in McAllister '329 corresponds to an ingress node (see, for example, col. 8, lines 26-31) and element 32B corresponds to a node which is attached to ingress node 32A (see, for example, Figs. 2A and 2B, and col. 6, lines 10-12). McAllister '329 in no way discloses or suggests that node 32B is a non-alternative-route-enabled node. In stark contrast, McAllister '329 specifically discloses that node 32B may transmit data via two separate paths (see, for example, col. 7, lines 35-49, where McAllister '329 specifically discloses that operator directed

route (ODR) soft permanent virtual circuits (SPVCs) can be established through a primary route including node 32A; node 32B, line 36BC; node 32C; and 32D, and an alternate route including node 32A; node 32B, line 36BC'; node 32C; and 32D). Thus, node 32B is capable of transmitting data via two separate routes (a primary route and an alternative route). Therefore, node 32B would be construed as an alternative-route-enabled node and not, as alleged by the Examiner, a non-alternative-route-enabled node.

Even assuming, for the sake of argument, that one skilled in the art at the time of Appellants' invention could reasonably construe McAllister '329's node 32B as a non-alternative-route-enabled node (a point that Appellants do not concede), Appellants submit that McAllister '329 does not disclose or suggest that node 32B stores an initial route from a source device to a destination device, as recited in claim 8. As set forth above, the Examiner relies on Fig. 5 and col. 13, lines 35-67, of McAllister '329 for allegedly disclosing the above feature of claim 8 (Office Action, pg. 25).

Fig. 5 of McAllister '329 depicts a relational database structure 52 that is used by a network node 32 to keep track of ODR SPVCs managed by that network node 32 (col. 13, lines 35-37). McAllister '329 appears to disclose that ingress node 32A manages the ODR SPVCs of network 30 (see, for example, col. 9, lines 6-21, where McAllister '329 specifically discloses that ingress node 32A stores the configuration data for and initiates the ODR SPVC and that the nature of the ODR SPVC is transparent to the remainder of network 30). The Examiner has not pointed to any section of McAllister '329 that discloses or suggests that node 32B stores an initial route from a source device to a destination device, as recited in claim 8.

At col. 13, lines 35-67, McAllister '329 discloses:

> FIG. 5 illustrates a preferred relational database structure 52 used by a given network node 32 to keep track of ODR SPVCs managed thereby. The node database structure includes the following tables: (a) an indexed table 54 of P-NNI network node identifiers; (b) an indexed table 56 of "compressed" ODR SPVC DTLs, as explained in greater detail below, and an ODR SPVC list 58, part 59 of which is stored in random access memory. The ODR SPVC database 52 includes one record for each ODR SPVC which has originated from or is managed by the node. Each ODR SPVC record includes:
>
> (a) an "operatorDrtRtng" field 60 which specifies whether the corresponding ODR SPVC is a conventional SPVC or an ODR SPVC;
>
> (b) a "prmNtwrkPathIndex" field 62 which points to an entry in the compressed DTL table that represents the primary path of an ODR SPVC;
>
> (c) a "altNtwrkPathIndex" field 64 which points to the alternate path entry in the compressed DTL table for the ODR SPVC; and
>
> (d) a "re-route scheme" field 66 which stores the re-route scheme for the ODR SPVC.
>
> In this manner, the source node of an SPVC can determine whether the SPVC is an ODR SPVC, and, if so, determine the attributes associated with the ODR SPVC in order to take appropriate action in the event of link failure.
>
> The compressed DTL table 56 has a "compressed DTL" field 68 for storing network paths in a compressed format. A compressed network path is illustrated in greater detail at reference no. 68' and comprises a sequence of link identifiers (i.e. P-NNIPortIdfield 70), and pointers 72 to the node table 54. In the preferred embodiment, P-NNIPortId=0 signifies that no link has been specified by the operator, whereby.

This section of McAllister '329 discloses, as set forth above, a relational database structure 52 that is used by a network node 32 to keep track of ODR SPVCs managed by that network node 32. This section of McAllister '329 in no way discloses or suggests that the node that keeps track of an ODR SPVC is a non-alternative-route-enabled node. In fact, McAllister '329 appears to disclose that ingress node 32A (an alternative-route-enabled node) manages the ODR SPVCs of network 30 (see, for example, col. 9, lines 6-21, where McAllister '329 specifically discloses that

ingress node 32A stores the configuration data for and initiates the ODR SPVC and that the nature of the ODR SPVC is transparent to the remainder of network 30). Therefore, this section of McAllister '329 cannot disclose or suggest a non-alternative-route-enabled node that stores an initial route from a source device to a destination device, as recited in claim 8.

Moreover, McAllister '329 does not disclose or suggest that relational database structure 52 stores an initial route from a source device to a destination device, as required by claim 8. Instead, McAllister '329 specifically discloses that relational database structure 52 stores an indexed table 54 of P-NNI network node identifiers, and an indexed table 56 of compressed ODR SPVC designated transit lists (DTLs) and an ODR SPVC list 58. McAllister '329 does not disclose or suggest that relational database structure 52 stores an initial route from a source device to a destination device, as recited in claim 8.

Even assuming, for the sake of argument, that the disclosure of McAllister '329 can reasonably be construed to disclose a non-alternative-enabled node that stores an initial route from a source device to a destination device, as recited in claim 8 (a point that Appellants do not concede), Appellants submit that one skilled in the art would not have been motivated to incorporate this alleged teaching of McAllister '329 into the Haskin et al. system, absent impermissible hindsight.

With respect to motivation, the Examiner alleges:

> it would have been obvious ... to modify the system of Haskin with the teaching of McAllister to provide the at least one alternative-route enabled node and the at least one non-alternative-route-enabled node storing an initial route from the source device to the destination device in order to reduce the probability of packet loss in a network

(Office Action, pp. 25-26). Appellants submit that the Examiner's motivation is merely a

conclusory statement regarding an alleged benefit of the combination. Such motivation statements have consistently been found to be insufficient for establishing a *prima facie* case of obviousness. In this respect, Appellants rely upon In re Deuel, 51 F.3d 1552, 34 USPQ2d 1210 (Fed. Cir. 1995), where it was held that generalizations do not establish the realistic motivation to modify a specific reference in a specific manner to arrive at a specifically claimed invention. Appellants submit that the Examiner's purported motivation to combine the cited references is merely conclusory and based on impermissible hindsight.

Moreover, the Examiner does not explain why incorporating determining an initial route including at least one alternative-route enabled node and at least one non-alternative-route-enabled node, where the at least one alternative-route-enabled node and the at least one non-alternative-route-enabled node store the initial route from the source device to the destination device into the Haskin et al. system would reduce the probability of packet loss. Appellants submit that the Examiner's motivation is impermissibly based on hindsight.

For at least the foregoing reasons, Appellants submit that the rejection of claim 8 under 35 U.S.C. § 103(a) based on Haskin et al. and McAllister '329 is improper. Accordingly, Appellants request that the rejection be reversed.

3. Claim 18.

Independent claim 18 is directed to a method for locally rerouting packets traveling on an established route when a node in a network of interconnected nodes fails. The method includes computing, at select intermediary nodes along the established route, an alternative route leading from the select intermediary node to the destination device of the established route; storing, at each of the select intermediary nodes, the alternative route; determining locally that the

established route has failed; and automatically forwarding packets on the alternative route. Haskin et al. and McAllister '329, whether taken alone or in any reasonable combination, do not disclose or suggest this combination of features.

For example, Haskin et al. and McAllister '329 do not disclose or suggest computing, at select intermediary nodes along the established route, an alternative route leading from the select intermediary node to the destination device of the established route and storing, at each of the select intermediary nodes, the alternative route. The Examiner does not address these features in the Office Action. Instead, the Examiner appears to have simply copied the rejection of claim 1 (see Office Action, pp. 19-22). Claim 1, however, recites different features than are recited in claim 18. For example, claim 1 does not recite computing, at select intermediary nodes along the established route, an alternative route leading from the select intermediary node to the destination device of the established route and storing, at each of the select intermediary nodes, the alternative route, as recited in claim 18. The Examiner has not established a *prima facie* case of obviousness with respect to claim 18.

Nonetheless, Haskin et al. and McAllister '329 do not disclose or suggest computing, at select intermediary nodes along the established route, an alternative route leading from the select intermediary node to the destination device of the established route and storing, at each of the select intermediary nodes, the alternative route. Haskin et al. discloses establishing an alternative opposite direction unidirectional label switched path between a last hop switch 5 and a destination switch 7 (col. 3, line 61, to col. 4, line 45). Haskin et al. in no way discloses or suggests computing, at select intermediary nodes along the established route, an alternative route leading from the select intermediary node to the destination device of the established route and

storing, at each of the select intermediary nodes, the alternative route, as recited in claim 18.

McAllister '329 discloses that alternate routes are provided by an operator of network management system 46 (col. 7, line 50, to col. 8, line 8). McAllister '329 does not disclose or suggest computing, at select intermediary nodes along the established route, an alternative route leading from the select intermediary node to the destination device of the established route and storing, at each of the select intermediary nodes, the alternative route, as recited in claim 18.

For at least the foregoing reasons, Appellants submit that the rejection of claim 18 under 35 U.S.C. § 103(a) based on Haskin et al. and McAllister '329 is improper. Accordingly, Appellants request that the rejection be reversed.

4. Claim 24.

Independent claim 24 is directed to a network for forwarding packets from a source device to a destination device and including a plurality of intermediate network nodes. The plurality of intermediate network nodes includes at least one first node configured to store an initial route from the source device to the destination device and at least one alternative route from the source device to the destination device, detect a failure in a downstream network node in the initial route, and automatically forward a packet to a node on one of the at least one alternative route in response to detecting the failure; and at least one second node configured to store the initial route, detect a failure in a downstream network node in the initial route, and forward a failure message to an upstream first node in response to detecting the failure, the failure message causing the upstream first node to automatically forward a packet to a node on one of the at least one alternative route. Haskin et al. and McAllister '329, whether taken alone or in any reasonable combination, do not disclose or suggest this combination of features.

For example, Haskin et al. and McAllister '329 do not disclose or suggest at least one first node and at least one second node that store an initial route from a source device to a destination device. The Examiner appears to admit that Haskin et al. does not disclose this feature and relies on Fig. 5 and col. 13, lines 35-67, of McAllister '329 for allegedly disclosing the above feature of claim 24 (Office Action, pg. 31). Moreover, the Examiner appears to allege that McAllister '329's node 32A corresponds the first node and McAllister '329's node 32B corresponds to the second node recited in claim 24 (Office Action, pg. 30). Appellants respectfully disagree with the Examiner's interpretation of McAllister '329.

Fig. 5 of McAllister '329 depicts a relational database structure 52 that is used by a network node 32 to keep track of ODR SPVCs managed by that network node 32 (col. 13, lines 35-37). McAllister '329 appears to disclose that ingress node 32A manages the ODR SPVCs of network 30 (see, for example, col. 9, lines 6-21, where McAllister '329 specifically discloses that ingress node 32A stores the configuration data for and initiates the ODR SPVC and that the nature of the ODR SPVC is transparent to the remainder of network 30). The Examiner has not pointed to any section of McAllister '329 that discloses or suggests that node 32B stores an initial route from a source device to a destination device, as recited in claim 24.

At col. 13, lines 35-67, McAllister '329 discloses:

> FIG. 5 illustrates a preferred relational database structure 52 used by a given network node 32 to keep track of ODR SPVCs managed thereby. The node database structure includes the following tables: (a) an indexed table 54 of P-NNI network node identifiers; (b) an indexed table 56 of "compressed" ODR SPVC DTLs, as explained in greater detail below, and an ODR SPVC list 58, part 59 of which is stored in random access memory. The ODR SPVC database 52 includes one record for each ODR SPVC which has originated from or is managed by the node. Each ODR SPVC record includes:
>
> (a) an "operatorDrtRtng" field 60 which specifies whether the corresponding ODR

> SPVC is a conventional SPVC or an ODR SPVC;
>
> (b) a "prmNtwrkPathIndex" field 62 which points to an entry in the compressed DTL table that represents the primary path of an ODR SPVC;
>
> (c) a "altNtwrkPathIndex" field 64 which points to the alternate path entry in the compressed DTL table for the ODR SPVC; and
>
> (d) a "re-route scheme" field 66 which stores the re-route scheme for the ODR SPVC.
>
> In this manner, the source node of an SPVC can determine whether the SPVC is an ODR SPVC, and, if so, determine the attributes associated with the ODR SPVC in order to take appropriate action in the event of link failure.
>
> The compressed DTL table 56 has a "compressed DTL" field 68 for storing network paths in a compressed format. A compressed network path is illustrated in greater detail at reference no. 68' and comprises a sequence of link identifiers (i.e. P-NNIPortIdfield 70), and pointers 72 to the node table 54. In the preferred embodiment, P-NNIPortId=0 signifies that no link has been specified by the operator, whereby.

This section of McAllister '329 discloses, as set forth above, a relational database structure 52 that is used by a network node 32 to keep track of ODR SPVCs managed by that network node 32. This section of McAllister '329 in no way discloses or suggests that the node that keeps track of an ODR SPVC is a second node, as recited in claim 24. In fact, McAllister '329 appears to disclose that ingress node 32A (a first node) manages the ODR SPVCs of network 30 (see, for example, col. 9, lines 6-21, where McAllister '329 specifically discloses that ingress node 32A stores the configuration data for and initiates the ODR SPVC and that the nature of the ODR SPVC is transparent to the remainder of network 30). Therefore, this section of McAllister '329 cannot disclose or suggest a second node that stores an initial route from a source device to a destination device, as recited in claim 24.

Moreover, McAllister '329 does not disclose or suggest that relational database structure

52 stores an initial route from a source device to a destination device, as required by claim 24. Instead, McAllister '329 specifically discloses that relational database structure 52 stores an indexed table 54 of P-NNI network node identifiers, and an indexed table 56 of compressed ODR SPVC designated transit lists (DTLs) and an ODR SPVC list 58. McAllister '329 does not disclose or suggest that relational database structure 52 stores an initial route from a source device to a destination device, as recited in claim 24.

Even assuming, for the sake of argument, that the disclosure of McAllister '329 can reasonably be construed to disclose a first node and a second node that store an initial route from a source device to a destination device, as recited in claim 24 (a point that Appellants do not concede), Appellants submit that one skilled in the art would not have been motivated to incorporate this alleged teaching of McAllister '329 into the Haskin et al. system, absent impermissible hindsight.

With respect to motivation, the Examiner alleges

> it would have been obvious … to modify the system of Haskin with the teaching of McAllister to provide store an initial route from the source device to the destination device and at least one alternative route form the source device to the destination device in order to reduce the probability of packet loss in a network

(Office Action, pg. 31). Appellants submit that the Examiner's motivation is merely a conclusory statement regarding an alleged benefit of the combination. Such motivation statements have consistently been found to be insufficient for establishing a *prima facie* case of obviousness. In this respect, Appellants rely upon In re Deuel, 51 F.3d 1552, 34 USPQ2d 1210 (Fed. Cir. 1995), where it was held that generalizations do not establish the realistic motivation to modify a specific reference in a specific manner to arrive at a specifically claimed invention. Appellants submit that the Examiner's purported motivation to combine the cited references is merely

conclusory and based on impermissible hindsight.

Moreover, the Examiner does not explain why incorporating at least one first node and at least one second node that store an initial route from a source device to a destination device into the Haskin et al. system would reduce the probability of packet loss. Appellants submit that the Examiner's motivation is impermissibly based on hindsight.

For at least these additional reasons, Appellants submit that the rejection of claim 24 under 35 U.S.C. § 103(a) based on Haskin et al. and McAllister '329 is improper. Accordingly, Appellants request that the rejection be reversed.

G. The rejection of claim 14 under 35 U.S.C. § 103(a) based on McAllister '329 in view of Cheng should be reversed.

1. Claim 14.

Independent claim 14 is directed to a method for forwarding packets from a source device to a destination device in a network of interconnected elements including nodes and links. The method includes determining an initial route by determining a short path from the destination device to the source device within the network, refining the path according to administrative constraints, and establishing the path as the initial route, the initial route being prioritized to establish a hierarchy for preemption in routing network traffic; determining an alternative route; forwarding packets on the initial route; detecting a failed element; and automatically forwarding packets on the alternative route without communicating with either the source or the destination. McAllister '329 and Cheng, whether taken alone or in any reasonable combination, do not disclose or suggest this combination of features.

For example, McAllister '329 and Cheng do not disclose or suggest determining an initial

route by determining a short path from the destination device to the source device within the network, refining the path according to administrative constraints, and establishing the path as the initial route, the initial route being prioritized to establish a hierarchy for preemption in routing network traffic. The Examiner admits that McAllister '329 does not disclose these features (Office Action, pp. 33-34). The Examiner relies on col. 12, lines 20-22, of Cheng for allegedly disclosing the above features of claim 14 (Office Action, pg. 34). Appellants respectfully disagree with the Examiner's interpretation of Cheng.

At col. 12, lines 19-22, Cheng discloses:

> As shown in Table 2, this path has an aggregate cost of only 22 cost units (10+12) and is the shortest (i.e., least-cost) path within network 70 between switches 72 and 76.

This section of Cheng does not disclose or suggest determining an initial route by determining a short path from the destination device to the source device within the network, refining the path according to administrative constraints, and establishing the path as the initial route, the initial route being prioritized to establish a hierarchy for preemption in routing network traffic, as recited in claim 14.

Even assuming, for the sake of argument, that that the above section of Cheng can reasonably be construed to disclose determining an initial route by determining a short path from the destination device to the source device within the network, refining the path according to administrative constraints, and establishing the path as the initial route, the initial route being prioritized to establish a hierarchy for preemption in routing network traffic (a point that Appellants do not concede), Appellants submit that one skilled in the art at the time of Appellants' invention would not have been motivated to incorporate this alleged teaching of

Cheng into the McAllister '329 system, absent impermissible hindsight. With respect to motivation, the Examiner alleges:

> it would have been obvious ... to modify the system of McAllister et al. with the teaching of Cheng to provide determining an initial route by determining a short path from the destination device to the source device within the network, refining the path according to administrative constraints, and establishing the path as the initial route, the initial route being prioritized to establish a hierarchy for preemption in routing network traffic in order to select routing paths through networks

(Office Action, pg. 34). Appellants submit that the Examiner's motivation is merely a conclusory statement regarding an alleged benefit. Such motivation statements are insufficient for establishing a *prima facie* case of obviousness. In this respect, Appellants rely upon In re Deuel, 51 F.3d 1552, 34 USPQ2d 1210 (Fed. Cir. 1995), where it was held that generalizations do not establish the realistic motivation to modify a specific reference in a specific manner to arrive at a specifically claimed invention. Appellants submit that the Examiner's purported motivation to combine the cited references is merely conclusory and based on impermissible hindsight.

For at least the foregoing reasons, Appellants submit that the rejection of claim 14 under 35 U.S.C. § 103(a) based on McAllister '329 and Cheng is improper. Accordingly, Appellants request that the rejection of claim 14 be reversed.

VIII. CONCLUSION

In view of the foregoing arguments, Appellants respectfully solicit the Honorable Board to reverse the Examiner's rejections of claims 1-4, 6, 8-21, and 24 under 35 U.S.C. §§ 102 and 103.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1070 and please credit any excess fees to such deposit account.

Respectfully submitted,

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IX. CLAIM APPENDIX

1. A network for forwarding packets from a source device to a destination device, said network including a plurality of network elements including a plurality of nodes and connecting links, the plurality of nodes including at least one alternative-route-enabled node and at least one non-alternative-route-enabled node, wherein the at least one non-alternative-route-enabled node comprises:

a storage space to store an initial route from the source device to the destination device;

a mechanism to detect failure in a downstream network element in the initial route; and

a forwarder to automatically forward a failure message upstream along the initial route to an alternative-route-enabled node, the failure message causing the alternative-route-enabled node to begin forwarding packets on an alternative route.

2. The node in claim 1, wherein the network is a connection-oriented network with a plurality of established initial routes.

3. The node in claim 2, wherein the plurality of nodes includes a label-switched router.

4. The node in claim 1, wherein the alternative route does not include the

downstream network element in the initial route.

6. The node in claim 1, wherein the mechanism to detect failure sends communication packets to downstream nodes at regular intervals.

8. A method for forwarding packets from a source device to a destination device in a network of interconnected elements including nodes and links, comprising:

determining an initial route, the initial route including at least one alternative-route enabled node and at least one non-alternative-route-enabled node, the at least one alternative-route-enabled node and the at least one non-alternative-route-enabled node storing an initial route from the source device to the destination device;

determining an alternative route by identifying the at least one alternative-route-enabled node in the initial route, identifying downstream interconnected elements, and generating the alternative route based on the identified at least one alternative-route-enabled node and the identified downstream interconnected elements;

forwarding packets on the initial route;

detecting a failed element; and

automatically forwarding packets on the alternative route without communicating with either the source or the destination.

9. The method of claim 8, wherein determining the initial route further comprises:

determining a short path from the destination device to the source device within

the network;

refining the path according to administrative constraints; and

establishing the path as the initial route.

10. The method of claim 9, wherein refining the path comprises rejecting the path exceeding bandwidth allocation and hop limit.

11. The method of claim 8, wherein determining the alternative route further comprises:

determining a shortest route from a node preceding the failed element to the destination device within the network;

refining the route to exclude the failed element on the initial route; and

establishing the alternative route for forwarding packets.

12. The method of claim 8, wherein detecting a failure is conducted locally by a node preceding the failed element without requiring notification of a master server or an ingress node.

13. The method of claim 8, wherein determining the alternative route comprises:

reserving bandwidth available on the initial route;

generating the alternative route by invoking a routing protocol;

refining the alternative route by excluding the failed element; and

establishing the alternative route.

14. A method for forwarding packets from a source device to a destination device in a network of interconnected elements including nodes and links, comprising:

determining an initial route by determining a short path from the destination device to the source device within the network, refining the path according to administrative constraints, and establishing the path as the initial route, the initial route being prioritized to establish a hierarchy for preemption in routing network traffic;

determining an alternative route;

forwarding packets on the initial route;

detecting a failed element; and

automatically forwarding packets on the alternative route without communicating with either the source or the destination.

15. The method of claim 8, wherein the determining the alternative route comprises checking bandwidth allocation.

16. The method of claim 15, wherein checking bandwidth allocation comprises dynamically balancing capacity of nodes and links.

17. The method of claim 8, wherein determining the alternative route comprises:

reserving bandwidth available on the initial route;

identifying a plurality of nodes associated with the failed element according to

network configuration information;

generating the alternative route excluding the failed element and the plurality of nodes;

establishing the alternative route.

18. A method for locally rerouting packets traveling on an established route when a node in a network of interconnected nodes fails, the method comprising:

computing, at select intermediary nodes along the established route, an alternative route leading from the select intermediary node to the destination device of the established route;

storing, at each of the select intermediary nodes, the alternative route;

determining locally that the established route has failed; and

automatically forwarding packets on the alternative route.

19. The method of claim 18, wherein computing the alternative route comprises:

reserving bandwidth available on the established route;

identifying a plurality of nodes associated with the failed node according to network configuration information;

generating the alternative route excluding the failed node and the plurality of nodes; and

establishing the alternative route.

20. The method of claim 19, wherein computing the alternative route further

comprises:

locating a set of established routes with a same destination device and same administrative constraints as the established route;

finding a common node, downstream from the failed node, after which the set of established routes and the established route utilize the same network elements;

establishing a new route from the common node to the destination device; and

incorporating the new route into the alternative route.

21. The method of claim 18, wherein determining locally that the established route has failed is conducted by a signaling protocol.

24. A network for forwarding packets from a source device to a destination device and including a plurality of intermediate network nodes, the plurality of intermediate network nodes comprising:

at least one first node configured to:

store an initial route from the source device to the destination device and at least one alternative route from the source device to the destination device,

detect a failure in a downstream network node in the initial route, and

automatically forward a packet to a node on one of the at least one alternative route in response to detecting the failure; and

at least one second node configured to:

store the initial route,

detect a failure in a downstream network node in the initial route, and

forward a failure message to an upstream first node in response to detecting the failure, the failure message causing the upstream first node to automatically forward a packet to a node on one of the at least one alternative route.

X. EVIDENCE APPENDIX

None.

XI. RELATED PROCEEDINGS APPENDIX

None.